

Telehealth Availability and Use of Related Technologies among Medicare-enrolled Cancer Survivors: An Early Snapshot from the COVID-19 Pandemic

Yuki Lama, Amy Davidoff, Robin C. Vanderpool, Roxanne E. Jensen

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Yuki Lama^{1*} PhD, MPH; Amy Davidoff^{2*} PhD, MS; Robin C. Vanderpool^{1*} DrPH; Roxanne E. Jensen^{3*} PhD

¹Health Communication and Informatics Research Branch Behavioral Research Program National Cancer Institute Bethesda US

²Healthcare Assessment Research Branch Healthcare Delivery Research Program National Cancer Institute Bethesda US

³Outcomes Research Branch Healthcare Delivery Research Program National Cancer Institute Bethesda US

*these authors contributed equally

Corresponding Author:

Roxanne E. Jensen PhD
Outcomes Research Branch
Healthcare Delivery Research Program
National Cancer Institute
9609 Medical Center Drive
Bethesda
US

Abstract

Background: There has been rapid integration of telehealth into care delivery during the COVID-19 pandemic. However, little is known about technology ownership, internet access and use for communication, and telehealth availability among cancer survivors who are disproportionately older.

Objective: To identify sociodemographic associations with technology ownership, internet access and use for communication, and telehealth availability in a population-based sample of older cancer survivors.

Methods: Data are from the Medicare Current Beneficiary Survey COVID-19 Summer 2020 Supplement administered between June 10, 2020–July 15, 2020. Analyses were restricted to beneficiaries who reported a prior (non-skin) cancer diagnosis and a usual source of care (N=2,044). Dichotomous outcomes included: (1) technology ownership, (2) internet access, (3) internet use for communication, and (4) telehealth availability from providers. Sociodemographic correlates included sex, age, race/ethnicity, Medicare/Medicaid dual enrollment, rurality, Census region, and self-reported comorbidities.

Results: Over half (53%) of cancer survivors reported using the Internet for communication purposes and 62% reported that their usual provider had telehealth services available. Using the internet for communication purposes was reported less frequently for rural compared to urban survivors (adjusted probability of 28% vs. 46%, $p<.001$), and for Hispanic and Black survivors compared to non-Hispanic Whites (29%, 31%, and 44% respectively, $p<.01$). Rural survivors reported lower telehealth availability (53% vs. 63% $p<.001$); no differences in telehealth availability were identified by race/ethnicity ($p>.05$).

Conclusions: During the COVID-19 pandemic, our findings highlight a complex digital divide among Medicare beneficiaries with a history of cancer related to device ownership necessary for telehealth, internet access and use for communication, and reports of providers having telehealth available. Multilevel approaches are needed to increase equitable telehealth availability and use for older cancer survivors. Suggested strategies include increasing broadband internet access to providers and patients in at-risk communities; supporting telehealth implementation among providers that serve populations with known health disparities; raising awareness of providers' available telehealth services among patients; and screening for technology use and provision of telehealth-related technical assistance among older, Black and Hispanic, dual Medicare/Medicaid enrolled, and rural cancer survivors.

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Authors:

Yuki Lama, Ph.D., MPH¹

Amy Davidoff, Ph.D., MS²

Robin C. Vanderpool, Dr.P.H.¹

Roxanne E. Jensen, Ph.D.³

Author Affiliations:

¹Health Communication and Informatics Research Branch, Behavioral Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute

²Healthcare Assessment Research Branch, Healthcare Delivery Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute

³Outcomes Research Branch, Healthcare Delivery Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute

Disclaimers: The opinions expressed by the authors are their own and this material should not be interpreted as representing the official viewpoint of the U.S. Department of Health and Human Services, the National Institutes of Health or the National Cancer Institute.

Corresponding author:

Roxanne E. Jensen, PhD

Outcomes Research Branch

Healthcare Delivery Research Program

Division of Cancer Control and Population Sciences

National Cancer Institute

9609 Medical Center Drive

Bethesda, MD 20892-9761 (For UPS/FedEx, use: Rockville, MD 20850)

Email: roxanne.jensen@nih.gov

Tel: 240-276-7588

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ABSTRACT

Background: There has been rapid integration of telehealth into care delivery during the COVID-19 pandemic. However, little is known about technology ownership, internet access and use for communication, and telehealth availability among cancer survivors, particularly those enrolled in Medicare.

Objectives: To identify sociodemographic associations with technology ownership, internet access and use for communication, and telehealth availability in a population-based sample of Medicare-enrolled cancer survivors.

Methods: Data are from the Medicare Current Beneficiary Survey COVID-19 Summer 2020

Supplement administered between June 10, 2020–July 15, 2020. Analyses were restricted to beneficiaries who reported a prior (non-skin) cancer diagnosis and a usual source of care (N=2,044). Dichotomous outcomes included: (1) technology ownership, (2) internet access, (3) internet use for communication, and (4) telehealth availability from providers. Sociodemographic correlates included sex, age, race/ethnicity, Medicare/Medicaid dual enrollment, rurality, Census region, and self-reported comorbidities.

Results: Over half (53%) of cancer survivors reported using the Internet for communication purposes and 62% reported that their usual provider had telehealth services available. Using the internet for communication purposes was reported less frequently for rural compared to urban survivors (adjusted probability of 28% vs. 46%, $p<.001$), and for Hispanic and Black survivors compared to non-Hispanic Whites (29%, 31%, and 44% respectively, $p<.01$). Rural survivors reported lower telehealth availability (53% vs. 63% $p<.001$); no significant differences in telehealth availability were identified by race/ethnicity.

Discussion: During the COVID-19 pandemic, study findings highlight a complex digital divide among Medicare beneficiaries with a history of cancer related to device ownership necessary for telehealth, internet access and use for communication, and reports of providers having telehealth available. Multilevel approaches are needed to increase equitable telehealth availability and use for cancer survivors. Suggested strategies include increasing broadband internet access to providers and patients in at-risk communities; supporting telehealth implementation among providers that serve populations with known health disparities; raising awareness of providers' available telehealth services among patients; and screening for technology use and provision of telehealth-related technical assistance among older and historically underserved cancer survivors.

Keywords: cancer survivors, Medicare, telehealth, COVID-19

Introduction

Throughout the COVID-19 pandemic, there has been a dramatic increase in telehealth, defined as “the exchange of medical information from one site to another through electronic communication to improve a patient’s health,” to deliver healthcare services [1-3]. Increased telehealth use was motivated by the need to limit COVID-19 exposure, particularly among vulnerable patient populations, and facilitated by increased familiarity with teleconferencing and changes in reimbursement and regulatory policies [2]. Cancer survivors are likely to be particularly vulnerable to access to care obstacles associated with COVID-19: they tend to be older and may have comorbidities and/or immunosuppression that heightens both risk and consequences of infection [4]. As a result, telehealth can provide particular benefit by reducing logistical barriers to timely cancer-related care [5]. Prior research has identified barriers to successful telehealth use for adults generally, including lack of computer and internet access, and limited digital literacy skills needed to negotiate video log-on processes [6]. Previous research demonstrates that characteristics such as older age, rurality, and lower income were associated with less access to and engagement with telehealth pre-pandemic [7-9]. However, assessing whether these patterns apply to cancer survivors, and persisted during the onset of the pandemic, remains underexplored. Therefore, this exploratory study’s aim was to identify sociodemographic correlates of technology ownership, internet access, internet use for communication, and telehealth availability, captured early during the COVID-19 pandemic among a nationally representative sample of Medicare beneficiaries with a cancer history in the United States.

Methods

Data Source and Sample: The Medicare Current Beneficiary Survey COVID-19 Summer 2020 Supplement, sponsored by the Centers for Medicare & Medicaid Services, is a telephone survey of community-dwelling Medicare beneficiaries administered between June 10-July 15, 2020. Individuals who are age 65 or older, disabled, or have End-Stage Renal Disease (ESRD) are eligible for Medicare [10]. Survey weights represent the population of beneficiaries continuously enrolled in

Medicare from January through summer 2020. Selected beneficiaries reported prior non-skin cancer diagnosis and a usual source of care other than urgent care or emergency departments.

Outcome Variables: We evaluated four dichotomous measures: (1) technology ownership (“Do you own or use any of the following: desktop or laptop, smartphone, or tablet?”), (2) internet access (“Do you have access to the internet?”), (3) internet use for communication (“Have you ever participated in video or voice calls or conferencing over the internet, such as with Skype or FaceTime?”), and (4) telehealth availability (“Does your usual provider offer telephone or video appointments, so that you don’t need to physically visit their office or facility?”).

Independent Variables: We assessed the role of sociodemographic characteristics including age, race/ethnicity, Medicare/Medicaid dual enrollment (an indicator of poverty) [11], and rurality defined by metropolitan statistical area, adjusting for sex, Census region, and self-reported comorbidities.

Statistical Analyses: Descriptive statistics and bivariate comparisons were generated for each outcome. Multivariable logistic regression models estimated the effects of the independent variables on each outcome. Results related to age, race/ethnicity, Medicare/Medicaid dual enrollment, and rurality are reported as adjusted predicted (marginal) probabilities. All estimates were weighted and analyses used SAS 9.4 (SAS Institute, Inc., Cary, NC) procedures to adjust for complex survey design (PROC SURVEYFREQ, SURVEYMEANS, and SURVEYLOGISTIC). Statistical tests were two-sided with $\alpha=0.05$. As MCBS data are publicly available and deidentified, the study was not considered to be human subjects research.

Results

The sample of Medicare-enrolled cancer survivors was 57% female, 41% 75 years or older, and 79% non-Hispanic white (N=2,044; weighted N=9,941,910). Over half (53%) used the internet for communication and 62% reported telehealth availability (Table 1).

Technology Ownership, Internet Access, and Internet Use for Communication

Older age, rural residence, dual Medicare/Medicaid enrollment, and non-Hispanic Black or Hispanic

race/ethnicity were associated with lower probabilities of owning technology, internet access, and internet use for communication (all $p < 0.05$) (Figure 1). Compared to urban cancer survivors, rural survivors had lower predicted probabilities of technology ownership (67% vs. 82% $p < .001$), internet access (58% vs. 79%, $p < .001$), and internet use for communication (28% vs. 46%, $p < .01$). Compared to non-Hispanic Whites, Hispanic and Black survivors had lower technology ownership (67% vs. 82%, $p < .001$; 65% vs. 82%, $p < .01$, respectively), internet access (56% vs. 81%, $p < .01$; 52% vs. 82%, $p < .001$, respectively), and internet use for communication (29% vs 44%, $p < .001$; 31% vs. 44%, $p < .01$, respectively). Compared to non-dual enrolled, dual Medicare/Medicaid enrolled beneficiaries had lower technology ownership (60% vs. 86%, $p < .001$), internet access (53% vs. 83%, $p < .001$), and internet use for communication (26% vs. 48%, $p < .001$).

Telehealth Availability

Older age, rural residence, and dual Medicare/Medicaid enrollment were associated with lower probabilities of telehealth availability. Compared to urban survivors, rural survivors had lower predicted probability of telehealth availability (53% vs. 63% $p < .001$). Telehealth availability was not associated with race/ethnicity (Figure 2). Compared to non-dual enrollees, dual Medicare/Medicaid enrolled beneficiaries had lower probability of being offered telehealth (53% vs. 63%, $p < 0.01$).

Discussion

Early during the COVID-19 pandemic, we found that over 80% of Medicare-enrolled cancer survivors owned the necessary technology for telehealth encounters, but only half had experience using the internet for communication; almost two-thirds of survivors reported that their usual provider offered telehealth. Consistent with previous research [12-14], study findings highlight a complex digital divide related to telehealth availability and technology ownership and use, particularly among older, Black, Hispanic, lower-income, and rural cancer survivors. Despite the potential of telehealth to meet the unique healthcare needs of cancer survivors (e.g., surveillance, comorbidities, primary and survivorship care), some patient groups face greater barriers to

technology access. These patterned differences in use and access underscore a need to engage multilevel interventions to mitigate the underlying barriers to telehealth use. These results have implications for clinicians, patient advocates, and policymakers as they seek to improve access to care for vulnerable cancer survivors, particularly as the COVID-19 pandemic continues and telehealth becomes an increasingly critical bridge between patients and providers.

Study findings highlight gaps in reported telehealth availability, raising concerns that some providers may have limited telehealth infrastructure [15]. Given the increasingly important role of telehealth to access services, clinicians may need to enhance their practices' telehealth capabilities and clinical workflow by providing additional staff support during video log-on and follow-up processes. New procedures may be needed to assess and refer patients to community resources that can augment technology access and telehealth literacy [16]. Patient advocates and policymakers can support clinician efforts to engage patients via telehealth through continued reimbursement of telehealth visits that support technical and staff requirements. Legislation supporting reimbursement of telehealth services beyond the pandemic, including audio-only telehealth visits, is critical in providing equitable access to care among older, rural cancer survivors living in poverty [17].

Gaps in patient access to technology need to be considered within the broader context of structural inequities and policies to address them. Data suggest limited broadband internet access is more prevalent among rural residents, adults over age 65, minority populations, and communities of lower socioeconomic status, the same populations that experience disparities in access to cancer survivorship care [18-20]. In parallel with supporting clinicians, ongoing efforts by policymakers to expand broadband access will be essential to reducing disparities in telehealth access. Findings suggest systemic factors may be influencing technology ownership, internet access and use for communication, and telehealth availability, necessitating further monitoring of telehealth in healthcare delivery to ensure that existing inequities in survivorship care are not exacerbated as telehealth availability increases.

Limitations and future research

The cross-sectional data are from June-July 2020 and do not reflect the population's telehealth experience over the course of the COVID-19 pandemic. Technology access and use and provider telehealth availability were self-reported and may be subject to bias; the survey did not measure telehealth use or difficulties with technology. The analytic sample included individuals aged <65 years, a special group of younger patients who are either disabled or have ESRD and may not be representative of other adult cancer survivors aged <65. Further, although sample respondents reported a cancer history, we cannot ascertain if cancer was an active health problem. Despite these limitations, the study draws on a large, population-based sample of cancer survivors, with timely and targeted questions addressing telehealth use early during the COVID-19 pandemic. Future research is needed to assess cancer survivors' experience with telehealth use as the pandemic continues. In addition, research should examine providers' experience with offering their patients telehealth and challenges in serving historically vulnerable populations of cancer survivors. More research is needed to understand the telehealth needs and preferences of Medicare-enrolled cancer survivors, particularly those facing barriers to accessing and using technology necessary for telehealth.

Conclusion

This study captures disparities in telehealth availability and related technological requirements during the COVID-19 pandemic among Medicare-enrolled cancer survivors. Developing and testing multilevel solutions for the "double-burden" of lack of technological access and disparities in access to healthcare are critical to ensure existing inequities in survivorship care are not exacerbated as telehealth becomes more embedded into post-pandemic healthcare delivery models.

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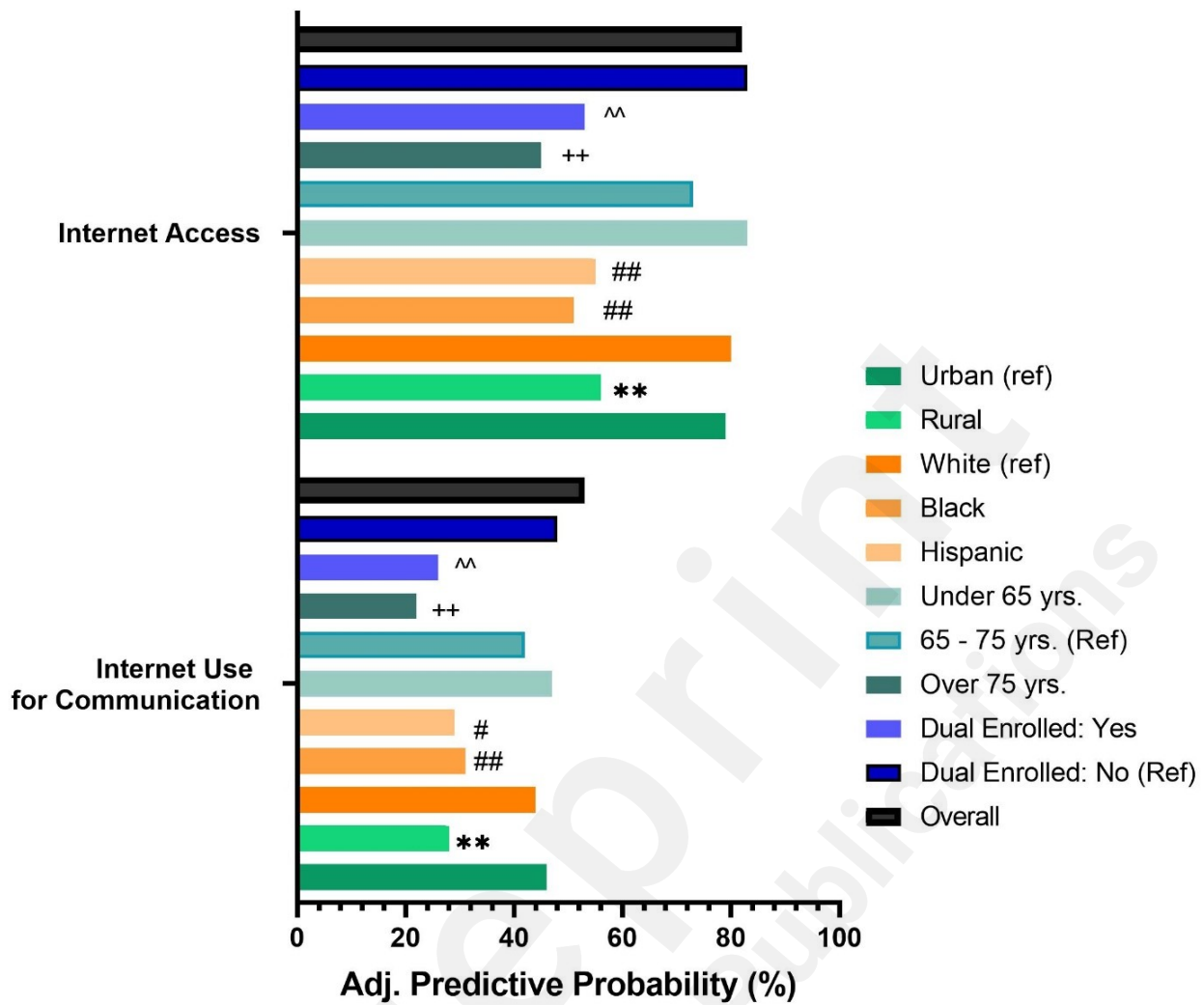
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Table 1. Sample characteristics of Medicare beneficiaries reporting a cancer history and a usual source of care as assessed by the Medicare Current Beneficiary Survey (N=2,044).

Characteristic	Unweighted N	Weighted %
Sex		
Male	900	43.1
Female	1144	56.9
Age group		
< 65 years	201	10.8
65-74 years	651	48.1
75+ years	1192	41.1
Race/ethnicity		
White non-Hispanic	1638	79.1
Black non-Hispanic	135	7.7
Hispanic	159	6.1
Other/Unknown	112	7.1
Dual Medicare/Medicaid enrollment (2019)		
Non-dual Medicare/Medicaid enrollment	1747	87.7
Any dual Medicare/Medicaid enrollment	297	12.3
Metropolitan statistical area residence		
Urban	1542	79.6
Rural	502	20.4
Census region		
Northeast	372	18.2
Midwest	461	21.3
South	819	40.0
West	392	20.6
Comorbidities		
0 conditions	458	24.2
1 condition	653	32.3
2+ conditions	933	43.5
Outcomes		
Technology ownership (computer, smartphone, tablet)	1588	83.3
Internet access	1604	82.9
Internet use for communication	957	53.0
Telehealth availability	1218	62.0

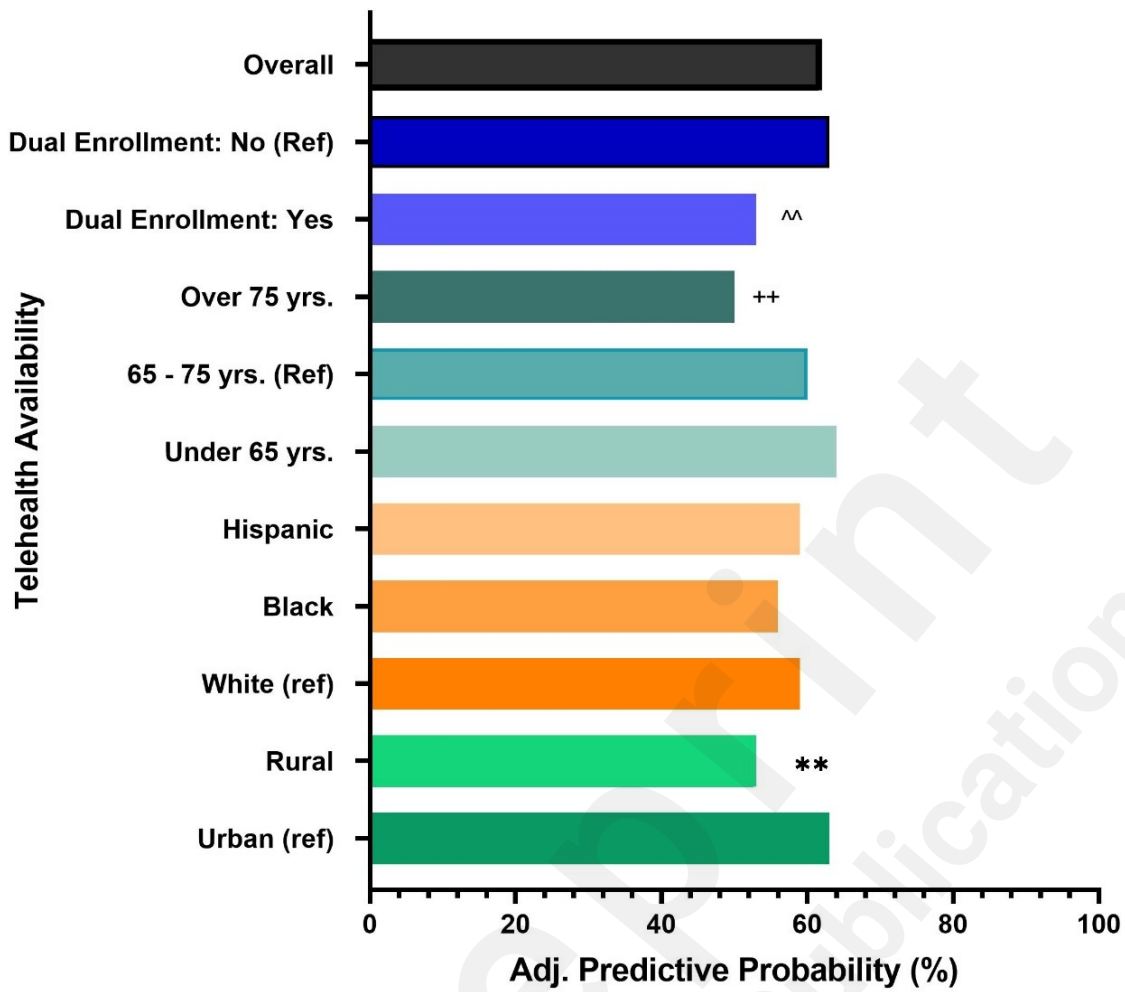
Note: Metropolitan statistical area residence defined by the Office of Management and Budget as having at least one urbanized area with a minimum population of 50,000.

Figure 1. Overall and differences in internet access and internet use for communication by rurality, race/ethnicity, age, and dual Medicare/Medicaid enrollment among Medicare Current Beneficiary Survey respondents with a history of cancer and a usual source of care.



* p<0.05, ** p<0.01 vs. urban (reference category)
 # p<0.05, ## p<0.01 vs. white race/ethnicity (reference category)
 + p<0.05, ++ p<0.01 vs. 65-75 yrs (reference category)
 ^ p<0.05, ^^ p<0.01 vs. Dual Enrolled: No (reference category)

Figure 2. Overall and differences in telehealth availability by dual Medicare/Medicaid enrollment, age, race/ethnicity, and rurality among Medicare Current Beneficiary Survey respondents with a history of cancer and a usual source of care.



* p<0.05, ** p<0.01 vs. urban (reference category)
p<0.05, ## p<0.01 vs. white race/ethnicity (reference category)
+ p<0.05, ++ p<0.01 vs. 65-75 yrs (reference category)
^ p<0.05, ^^ p<0.01 vs. Dual Enrolled: No (reference category)

Supplemental Table 1. Bivariate associations between technology ownership, internet access and use for communication, and telehealth availability and select sociodemographic characteristics among Medicare Current Beneficiary Survey respondents with a history of cancer and usual source of care (N=2,044).

Characteristic	Device Ownership		Internet Access		Use Internet to Make Video/Voice Calls		Telehealth Availability	
	Unweighted N	Weighted %	Unweighted N	Weighted %	Unweighted N	Weighted %	Unweighted N	Weighted %
Sex	p=0.67		p=0.18		p=0.26		p=0.65	
Male	699	82.87	718	84.07	406	51.32	548	62.75
Female	889	83.54	886	82.02	551	54.26	670	61.46
Age group	p<.0001		p<.0001		p<.0001		p<.01	
< 65 years	181	89.44	172	85.78	118	54.92	127	65.84
65-74 years	577	89.99	574	88.99	385	62.91	425	65.84
75+ years	830	73.74	858	75.02	454	40.86	666	56.54
Race/ethnicity	p<.0001		p<.0001		p<.01		p=0.44	
White non-Hispanic	1307	84.88	1331	85.47	798	54.83	964	61.69
Black non-Hispanic	84	70.38	80	63.45	46	41.38	73	56.91
Hispanic	108	74.36	101	69.31	61	41.13	106	66.89
Other/Unknown	89	86.88	92	87.28	52	55.4	75	66.98
Dual Medicare/Medicaid enrollment (2019)	p<.0001		p<.0001		p<.0001		p<.05	
Non-dual Medicare/Medicaid enrollment	1408	85.72	1432	85.96	854	55.67	1058	62.94
Any dual Medicare/Medicaid enrollment	180	65.67	172	61.09	103	33.83	160	55.45
Metropolitan statistical area residence	p<.0001		p<.0001		p<.0001		p<.01	
Urban	1242	85.47	1260	85.65	785	56.61	959	64.08
Rural	346	74.60	344	72.18	172	38.84	259	53.96
Census region	p<.01		p<.01		p=0.0526		p<.0001	
Northeast	279	82.98	282	82.40	173	52.74	218	61.54
Midwest	357	81.35	359	81.33	216	52.34	268	60.34
South	617	80.77	626	80.08	362	49.78	451	56.43
West	335	90.30	337	90.46	206	60.11	281	75.02
Comorbidities	p=0.11		p=0.0543		p<.05		p=0.32	
0 conditions	367	86.3133	368	86.15	217	57.90	253	59.81
1 condition	518	83.1088	530	83.43	331	54.30	394	60.97
2+ conditions	703	81.6548	706	80.70	409	49.28	571	64.02

Note: Metropolitan statistical area residence defined by the Office of Management and Budget as having at least one urbanized area with a minimum population of 50,000.

Supplemental Table 2. Factors associated with technology ownership among Medicare Current Beneficiary Survey respondents with a history of cancer and a usual source of care (N=2,044).

	Own computer, tablet, and/or smartphone
--	------------------------------------------------

Characteristic	Predicted Probability	aOR	95% CI	p-value
Metropolitan statistical area residence				
Urban (ref)	0.82			
Rural	0.67	0.44	0.31, 0.62	<.0001
Age group				
65-74 years (ref)	0.79			
< 65 years	0.88	2.06	1.07, 3.94	0.03
75+ years	0.50	0.27	0.19, 0.39	<.0001
Sex				
Male (ref)	0.72			
Female	0.75	1.14	0.89, 1.47	0.32
Race/ethnicity				
White non-Hispanic (ref)	0.82			
Black non-Hispanic	0.65	0.40	0.21, 0.75	0.01
Hispanic	0.67	0.44	0.26, 0.75	0.003
Other/Unknown	0.83	1.05	0.51, 2.13	0.90
Dual Medicare/Medicaid enrollment (2019)				
Nondual Medicare/Medicaid enrollment (ref)	0.86			
Any enrollment Medicare/Medicaid	0.60	0.25	0.15, 0.41	<.0001
Census region				
Midwest (ref)	0.71			
Northeast	0.72	1.05	0.68, 1.63	0.83
South	0.72	1.09	0.74, 1.60	0.66
West	0.84	2.23	1.41, 3.53	0.0008
Comorbidities				
0 (ref)	0.77			
1	0.74	0.85	0.56, 1.29	0.45
2+	0.74	0.85	0.60, 1.21	0.36

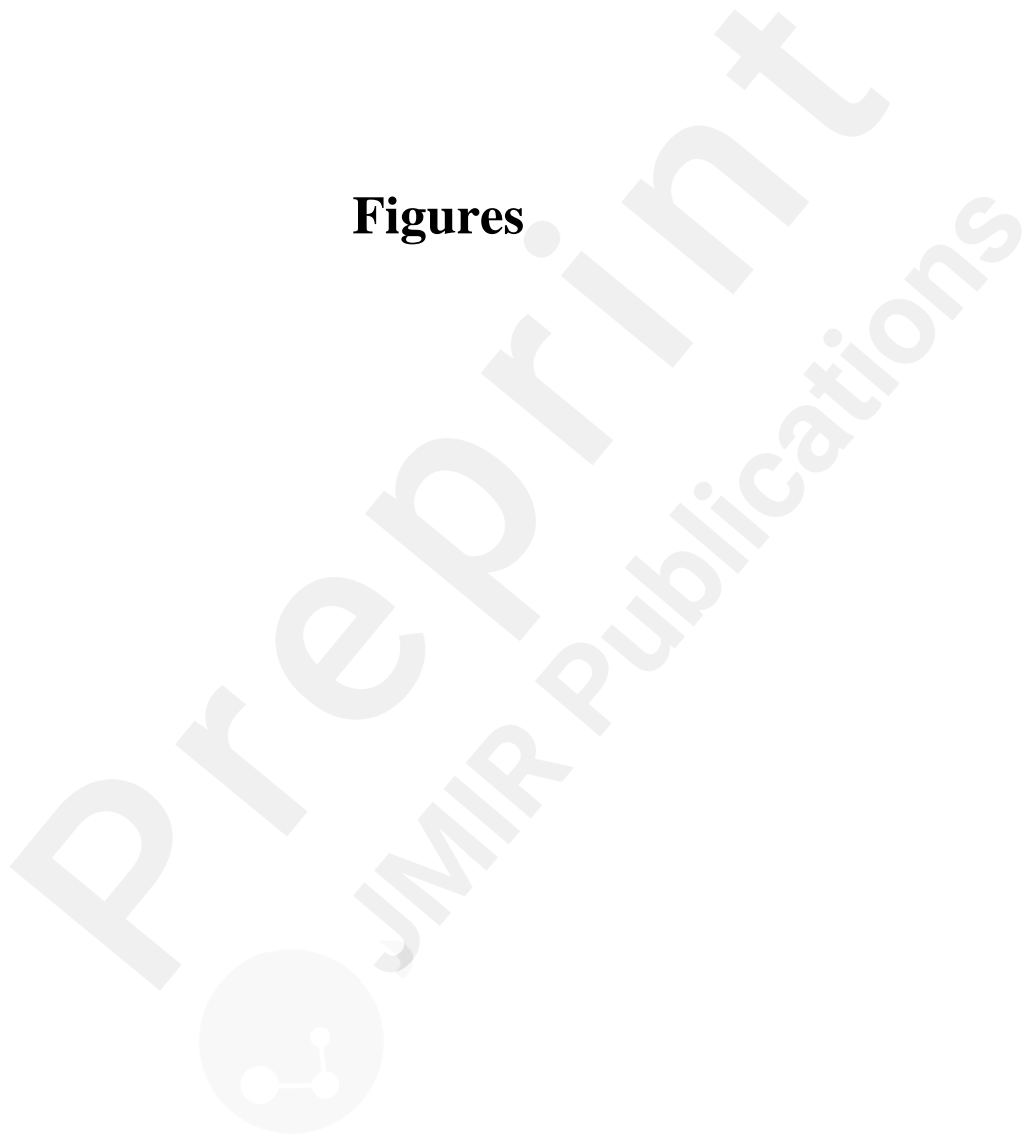
Note: Metropolitan statistical area residence defined by the Office of Management and Budget as having at least one urbanized area with a minimum population of 50,000.

Supplementary Files

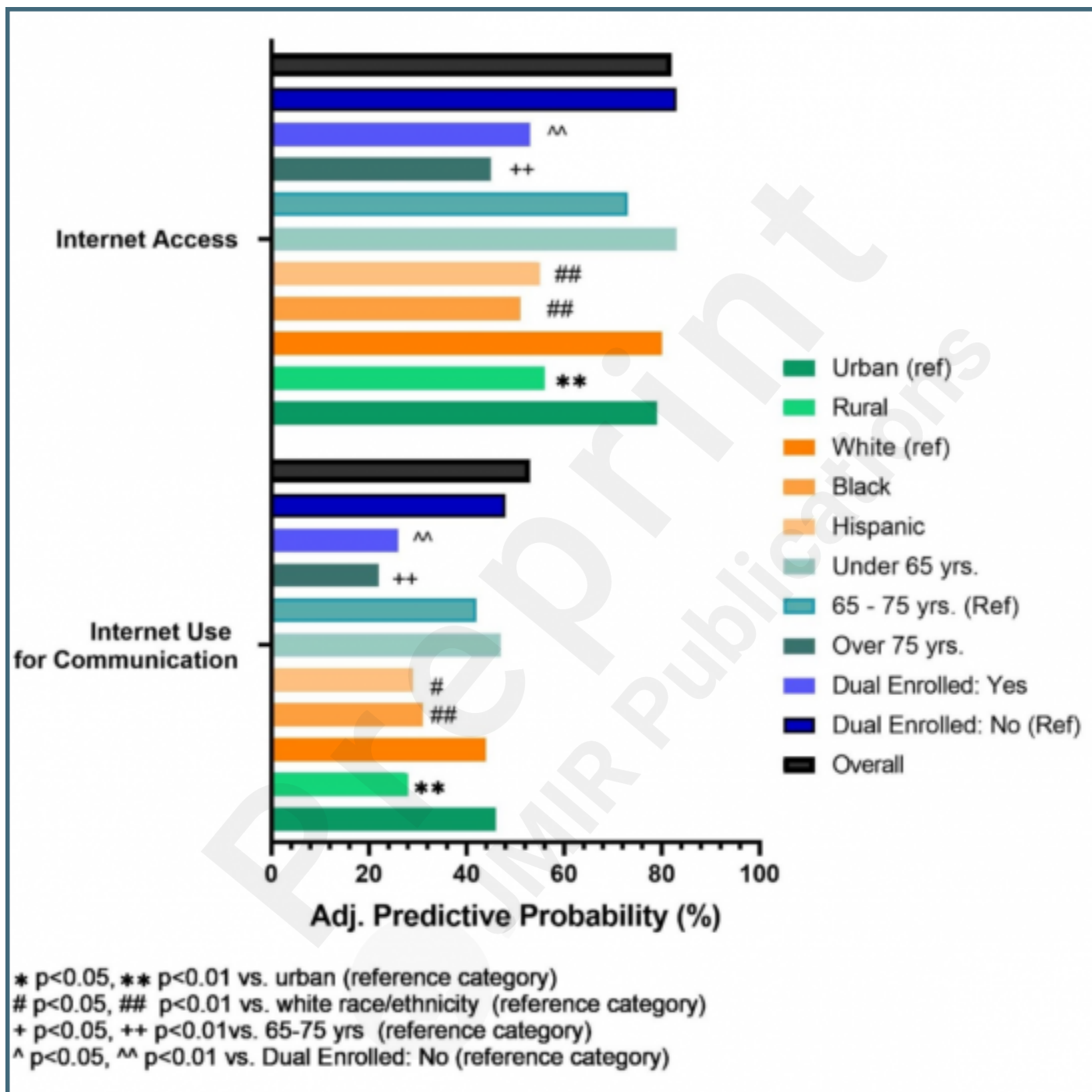
Supplemental Table 1. Bivariate associations between technology ownership, internet access and use for communication, and telehealth availability and select sociodemographic characteristics among MCBS respondents with a history of cancer and usual source of care (N=2044). Supplemental Table 2. Factors associated with technology ownership among MCBS respondents with a history of cancer and a usual source of care (N=2044).

URL: <http://asset.jmir.pub/assets/7538c624fe397d1b68defa5aab8b9610.docx>

Figures



Differences in internet access and internet use for communication by rurality, race/ethnicity, age, and dual Medicare/Medicaid enrollment among MCBS respondents with a history of cancer and a usual source of care.



Differences in telehealth availability by rurality, race/ethnicity, age, and dual Medicare/Medicaid enrollment among MCBS respondents with a history of cancer and a usual source of care.

